

iPSC Collection Characteristics

Qualities of CIRM's Human Pluripotent Stem Cell Lines:

All lines in CIRM's iPSC Repository are created by the same, standardized procedure, including:

- Non-integrating episomal reprogramming
- Patient sample reprogramming and testing by a single production facility operated by Cellular Dynamics International to minimize lab-to-lab variability
- Donor screening for HIV, HBV, and HCV
- Uniform demographic and clinical data collecting for disease collections and unaffected controls
- QC testing of:

Chromosomal Integrity	SNP microarray (Illumina Infinium HumanCore BeadChip)	No deletions or amplifications larger than 5MB (resolution of traditional G-banding assay) on SNP arrays with LogRDev score less than 0.5. Donor DNA is tested on all abnormal clones to whether the genetic abnormality is due to in vitro culture or is pre-existing in the donor. If the abnormality is pre-existing in the donor, the iPSC line is released to Repository.
Pluripotency	Analysis of gene expression by qPCR of 48 mRNAs.	A non-probabilistic binary linear classifier identifies the gene expression of the sample as iPSC based on an appropriate training set. This method has been benchmarked against traditional teratoma assays.
Identity Confirmation	Genotyping using PCR assay for 48 SNPs.	≤ 1 mismatch between donor and iPSC line.
Loss of Reprogramming Transgenes	Endpoint multiplex PCR for two plasmid sequences (EBNA and OriP).	Detection of ≤ 1 plasmid copy per 100 cells or a decrease in the number of plasmid copies detected at passage 5.
Mycoplasma	qPCR for 8 species.	Negative for all 8 species.
Sterility	Microbiological testing by third-party service provider	Negative for all tests.

Handling of Lines:

Lines are grown feeder free on E8/vitronectin and are frozen in colony form.

Donor Consenting:

Each donors consent included statements on the following:

- Testing the cells' DNA (this is referred to as the genetic code or sequence) and making the information known to other researchers
- Changing some of the genetic code or sequence within these cells
- Using cells to test or select drugs to treat disease
- Transplanting cells or resulting products to humans or animals
- Distributing cells widely (nationally and internationally) for research, training or commercial medical product development
- Future research and uses unforeseen at this time

Licensing agreements:

- Licensing agreements have been pre-negotiated with IP holders of iPS technology that allow Freedom to Operate commercial activities.

Find Out More:

iPSC Initiative Brochure [PDF]

Stem Cell FAQ

How do scientists model disease with iPSC's [video]

Source URL: <http://www.cirm.ca.gov/researchers/ipsc-repository/iPSC-collection-characteristics>